

## UNIT 2

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### Managing and Sharing Customer Data

It is important for organizations to keep track of customer information and research their customer base in order to collect feedback. There is an array of software applications designed to provide firms swift and efficient access to customer data (Customer Data Management or CDM refers to the collection, analysis, organising, reporting, and sharing of customer information holistically in an organization. CDM as a relationship management process is a key aspect because firms need a clear cut understanding of their customers' needs and wants to retain and expand their customer base)Furthermore, the issues faced by customers can be traced at the input gathering source and can be addressed rapidly.

Over the years, the value and availability of customer data has increased manifold. Firms are now turning to customer analytic applications for identifying the tastes, attitudes, behavior, and preferences of particular target markets to create more relevant products/ services and enhance marketing activities. The customer database management software stores, retrieves, organises, and analyses customer data.

Such **customer data can include:**

- a) Customer activity information (e.g.: website visits, frequency of interaction, sales, customer support, etc).
- b) Demographic data (e.g.: income, occupation, education levels, age group, marital status, etc).
- c) Psychographic data (e.g.: IAO (Interest, Attitudes, Opinions), social class, lifestyle, values, hobbies, etc).

Now, Customer Database Management applications are central to any CRM solution. This is because, CRM is a strategy for managing the customer experience through the use of

information about a customer, customer feedback, and history of interactions with the customer. Thus, quality of data and its availability are vital factors for successful CRM implementation. Cloud computing is a great proposition for managing Customer data due to its accessibility and cost effectiveness.

Customer relationship Management is Customer Understanding + Relationship Management and hence it is very obvious that for having sound understanding of customers, their accurate and current data have to be possessed by companies. The customer relationship management softwares which are in vogue now are essentially meant to address the needs of marketing, sales, and distribution, and also the customer service and support divisions within an organisation and create a platform for the three to share data on prospects, customers, partners, employees, and competitors. The data is managed through the entire lifecycle of the customers. CRM softwares manage customer data amongst many stakeholders of the firm in real-time resulting in better customer relations.

Let us discuss each of these. The common types of customer data that may arouse the interests of stakeholders are:

- Demographic and lifestyle
- Product preferences
- Media preferences and responsiveness
- Purchase behaviour and transactions
- Customer complaints, return, refund claims, risk management
- Mode of payment
- Loyalty schemes and its use
- Product data
- Service history
- Product movements within the organization
- Promotional results redemptions, sales
- Promotional plans and performance
- Profits and revenues from CRM initiatives

Customer data is obviously shared by all the levels and departments of the company. Without such an integration, CRM may not hit the bull's eye. But when it comes to sharing data with partners, there is so exclusivity as data at the individual level or at the level of very small customer segments are communicated.

This is because, the more detailed the data transfer, the greater the perceived risk. Less risk is usually perceived when it comes to lifestyle and demographic data. The role of a trusted third party such as consultants is well established in data vending.

Data protection legislations vary from country to country. They are also influenced by the business conduct guidelines of industries and markets. This is particularly factual in insurance and banking. World over, demand is accentuating to tighten regulations which can protect individual privacy as data use and sharing (through social networking sites, online shopping, e-commerce and other platforms) becomes more prevalent. The considerations here are 'what was the purpose and how the data was collected', 'with what expectation', "does it have customers approvals", 'relevancy of data', "data sharing within the company or group to the right and responsible people", 'retention of data in identifiable or anonymous form', and 'customer data held in non-automated forms' (e.g. paper files).

The most important decisions in customer data management are:

Who will have access to the database?

Who will generate reports?

How the data will be used?

How the data will be shared?

How will the company ensure the ethical and legal use of data?

How detailed the data be?

The front-line staff is the key people who manage customer data because they collect it at the source through customer interface. Such staff members who are entrusted with the responsibility of collecting data must be briefed properly. They should not be too intrusive.

When the customer participates in the interface, that data itself is worthy of capturing. Too much data shared by the company with others could do more harm than good. The contact of sales person or counter staff with the customers is vital to ensure that no internal disturbance occurs. Even a simple CRM database can store lot of data, but the managers must know what to extract from the files. Databases should not endanger customer management relationship.

The sources of data inputs are :

- > Government reports
- > Private reports
- > Trade Associations.
- > Point of Sale
- > Employees
- > Surveys, Focus Group

### **Customer information Databases**

In the past sections of this lesson, the importance and applications of customer data was discussed. The key aspects involved in data storage such as accuracy, relevancy, and updated information were also deliberated in detail. Now, under this heading the nature and elements of customer information database shall be elucidated in terms of what data is being stored, how it is updated and maintained, and when and how it is retrieved.

The customer information database configures personal information of customers such as contact addresses, e-mail id's, personal website addresses, phone numbers, as well as occupation details, family size, income brackets, and other demographic information. Many organizations also use their Customer Information Database (CID) to record purchase history, consumer behavior, buyer's preferences, service encounters, customer support needs, and also the after-sales details, feedback, and warranty information. Thus, any information pertaining to customer transactions and interactions are stored in the CRM database.

## **The Uses of Customer information Database (CID)**

A Customer Information Database can be used for storing customer information. In its context, as it was dealt with earlier, accuracy, current value, and scalability should be the prime properties of a CID.

The CRM initiatives including planning and implementation are heavily dependent on and influenced by customer information. The policy makers, marketers, and other decision-making authorities look forward to the status of CID. The organizational staff, especially sales and marketing personnel, act according to the information depicted in the CID. Both individual and group CIDs can be maintained and managed depending on the market trends and product/service characteristics.

CIDs are playing a crucial role in firms' designing their marketing plans. For instance, through a customer information database, marketers will be able to determine whether an individual customer or a group of customers show loyalty towards their product/services, and thereby take a view on extending offers and benefits to those segments. For lack of a well-framed CID, the marketing activities run the risk of missing the target as they tend to be very generic.

Customer information databases are highly useful as regards day-to-day business functions of organizations. Even the data on sales calls and inquiries aid the company to know the pulse of customers, their choices, likes and dislikes, tastes, and attitudes. Based on such information, marketers can devise their promotional plans, media selection, and communication efforts. CIDs are also useful for the selection of distribution channels. The method of purchase and choice of outlets of customers, i.e., whether through online shopping or from wholesale outlets or retail malls can be figured out from the data. Furthermore, which groups of customers are looking forward to product upgradation also gets reflected in an updated CRM database.

CIDs act like ready reckoners when it comes to the plans of action of relationship managers. They can find out the reasons for the defection of some segments or individual customers and act upon to curtail attrition.

## **Customer Information Database and Managerial Efficiency**

It is very clear that CID's help organizations to understand their customers well. The highlights of Customer Information Database are

- CID's streamline the inputs to be received by data sources.
- The data sources are kept active and ready.
- Data capturing is made more efficient.
- CID's enhance levels of communications between customers, staff, funders, and other stakeholders.
- CID's improve decision making capabilities of management as well as marketers.
- CID's reduce wastage of time, energy and resources.
- CRM database is the best marketing tool to the possession of detailed records maintained about customers, their needs, preferences, and buying habits. The database is used by management to create reports on buying trends and practices and focus marketing strategies to best fit the requirements using the information.
- CID's are central to managing the staff of organizations. Key information can be captured and stored within the database such as employee ID details and commission information. Managers find these data useful for assigning tasks to employees, check and evaluate the progress and review and monitor the sales records. The CRM database is an indicator for the managers on the productivity and motivation level of their employees.
- CIDs make customer support operations very effective.

### **Elements of Customer Information Database**

Capturing customer profile is the first stage in designing a CID. The inputs may include information about:

Who are the customers?

Are customers, individuals, segments or business entities?

Where are they located?

If the customers are enterprises, how big are they? What business they do?

Why the customers need product/service?

What are their tastes and attitudes?

What are their expectations?

What is their spending capacity?

How are their financial dealings?

How long have they been the customer?

**After capturing the data, the inputs are analysed in terms of**

> Frequency of purchase

>Time of purchase

>Patterns of buying (e.g.: seasonal)

> Quantity of purchase

Finally, the data is processed and assimilated to establish and reinforce relationships with customers.

**Ethics and Legalities of Data Use :**

Customer data, obtained directly from the customers, need to be used by organisations only for the purpose informed to the customers. Customers approval is necessary without which it is unethical for firms to sell data to others or use it for future research projects. Access to data obtained by companies is to be allowed only to genuine authorized people who really need it. Customer privacy must be maintained and respected at all times through proper use of data. Customer satisfaction may plummet, if information is used recklessly.

Ethics and legalities of data use is primarily concerned with 'how the data was collected'; 'for what purpose'; 'with what expectation and consent by the customer; 'ingenuous data sharing with utmost discretion'; 'relevancy and anonymity ; right use' at the right time'.

Ethics and legalities of data use has become a significant Management issue for all new and existing processes and systems. Companies should restrain from infringing legislation while using customer data competitively. Violation of ethics and norms may put them to legal trials; affect brand, and hamper future operations. At organisational level too, it would be ideal if data protection legislation is envisaged.

## **Advantages and Disadvantages of Customer Data**

The key benefits of sharing customer data include:

- Improved marketing strategies
- Identification of target market
- Enhancement of marketing communication channels and content
- Suitable product planning
- Refined pricing .
- Low costs of data acquisition
- Slashed mailing costs
- Reduced market risk
- Knowledge / skills transfer
- Low costs of data processing
- Reduced media campaign
- More responsiveness to market trends
- Greater chances of gaining competitive advantage
- More market share
- Better negotiation and bargaining power

**The main disadvantages of sharing customer data include:**

- Rise in marketing costs
- Data security issues
- Complexities of data analysis
- Legal constraints
- Increased costs of marketing
- Difficulties in data management
- Conflict caused by diverse objectives
- Incompatible sales procedures and marketing agenda
- General conflict of interest and decision making
- Differences in customer ownership
- Uncertainty over data ownership



- Conflicts over business strategies
- Incompatibility of systems and processes
- Inadequate competencies in data management

### **Data Warehousing Organising of Data for Analysing and Reporting**

Creation and management of customer database are important for companies. The data should be made available to all the users for taking appropriate decisions. Data based decisions are certainly the hallmark aspect of CRM. Data warehouses are generally used for storage of large customer data. In the competitive business world, the edge firms' have depends on using technology for data applications. Data warehousing provides companies efficient, flexible, and concrete means of accessing sets of data that are crucial for its effective functioning. It helps organizations in planning, forecasting and managing the assets and resources productively. Data warehousing now confirms a fruitful integration of operational and informational systems. In the recent past, data warehousing has progressed into an architecture for data delivery, for trending, analysis, and end-user computing.

For data mining to be effective, the firm must initiate with an available computerized data set. Data compiled from various sources should be consolidated into a data warehouse for analysis, especially to ensure accuracy and consistency. Thus, data warehouse is the infrastructure on which data mining application reside and operate.

Data warehousing is an amalgamation of decision support technologies, aimed at providing the decision makers authentic information for making better and faster decisions. According to Chaudhari and Dayal (1977), a data warehouse is a subjectOriented, integrated, time varying, non-volatile collection of data that is primarily used in Organizational decision ~ making. They are created and maintained with the core objective of decision support.

Data warehouse are typically maintained separately from the firm's operational databases. Operational databases are put to use for the company's day-to-day transactions Data warehouse is of a greater magnitude and contains historical and other data compiled from all areas of the organization. They are optimized for decision support. The decision. makers have ample records at their disposal in the data warehouse. Data based decision, require

integration of required data from heterogeneous sources which has to be consolidated into one large database so that analysis could be carried out. Data which are not relevant for, the day-to-day operational database may also be required for providing decision support \_and herein lays the value and importance of data warehouse. In data warehouse, the varying quality, firms, codes, etc are reconciled. Therefore, data warehouses are created separately from operational databases.

Data warehouses maybe constructed and used on standard or extended relational database management systems known relational OLAP (Online Analytical Processing) servers (ROLAP). In case of data being stored in a multi-dimensional form, they are called MOLAP (Multi-dimensional Online Analytical Processing) servers.

Creating a data warehouse is a long and arduous process that may take considerable amount of time, money, and efforts. Some companies prefer to subscribe to data marts. Data marts are minor data warehouses, which are subsets of parts focused on selected subjects. But, in future integration of data in such cases may be a case of concern.

A normal data warehouse includes tools for extracting data from different operational databases and external sources. This data is fine-tuned and made consistent by transformational tools. Integration of data is also performed. There are applications for loading the data into the data warehouse and refreshing time-bound. Data in the warehouse is stored and managed by one or more warehouse servers, which provide multidimensional data to the end-users. These comprise query and reporting tools, operational CRM tools or data mining tools. Finally, there is a base for storing and managing META data and tools for monitoring and administering the warehousing dynamics.

### **Data Warehousing as a CRM Tool**

The data warehouse is an important arm of the CRM system. Organisations are in an advantageous position while having data warehouses. The important merits are mentioned below.

Several channels are used for transactions with the customers. As the number of channels engaging customers increase, integration of information poses difficulties. An efficient data

warehouse presents better information integration to the decision maker.

The implementation of a data warehouse can help the firm respond to CRM queries after integrating the data from the web servers. This is particularly useful in the case of potential online customers, whose shopping practice may stop abruptly not leading to the purchase. The data warehouse gathers large amount of click-stream data that enables the organisations to understand how customers access their websites and how they act when they are accessing them. Use of data from data warehouse in terms of interactions with customers helps a great deal in personalization of services, Companies want to treat every customer with a personal touch getting to know their tastes, attitudes, preferences, interests, values, etc., For example, a company can infer what value-adds or extra incentives customers expect from them.

Data warehouses are highly useful for the marketing campaigns of firms. Campaign management is the process of planning, implementing, and assessing external campaigns. The data warehouse presents the empirical data required to determine the exact size of a campaign market, finding out customer prospects, and analysing the effectiveness of a campaign based on the responses.

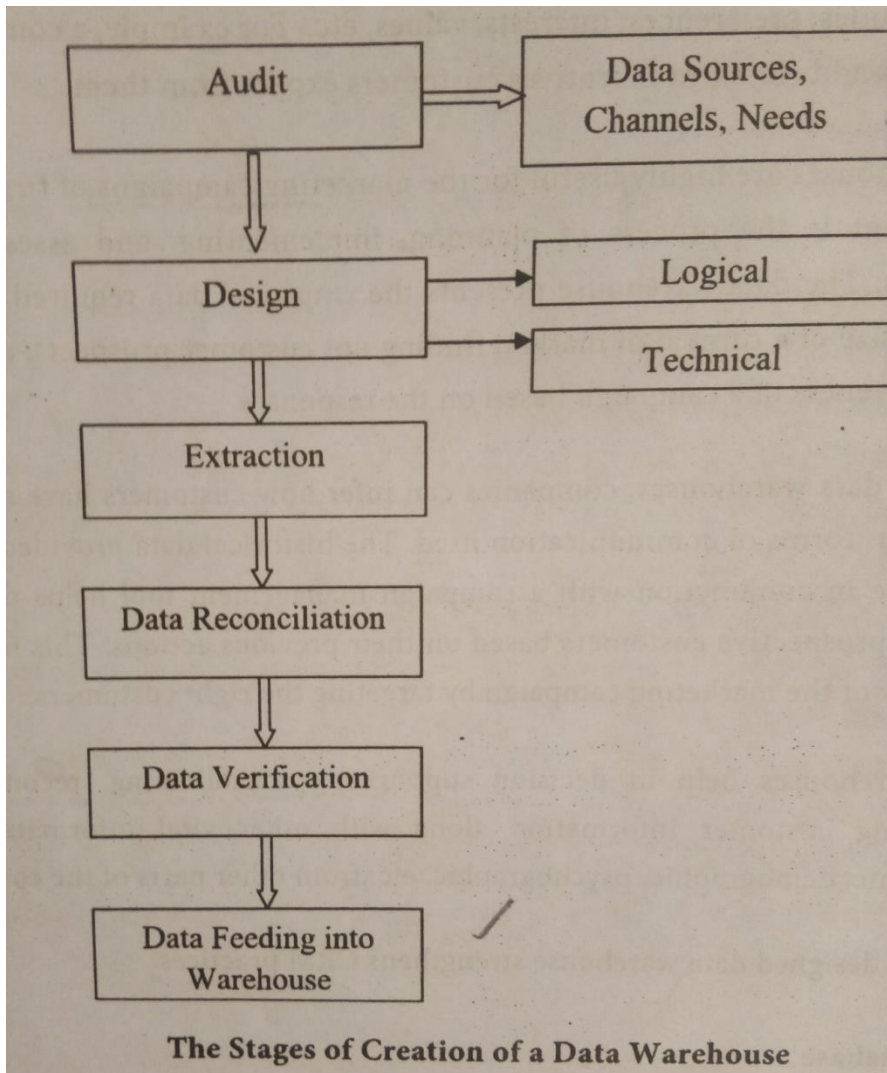
From the data warehouses, companies can infer how customers have responded to the various forms of communication used. The historical data provided by the data warehouse in conjunction with a campaign management tool helps the company to locate prospective customers based on their previous actions. This improves the efficiency of the marketing campaign by targeting the right customers.

Data warehouses help in decision support by consolidating, reconciling, and integration. Customer information along with other vital information namely geographic, demographic, psychographic, etc. from other parts of the company.

A well designed data warehouse strengthens CRM practices.

## Normalisation

The data that is stored in tables are logically organised based on a particular requirement that curtails duplication, reduces data anomalies and cements data integrity. The process by which data is structured rationally is known as normalisation. Normalisation simplifies the way data is considered and regulates its structure. A data warehouse can be normalized or de-normalised. It can be a relational database, multi-dimensional database, hierarchical database, object database, flat file, etc.



## **Benefits of Data Warehouse**

a) **Consistency:** Warehousing can be of great benefits to marketers. It not only helps them to find out who the seal customer is but also helps to locate the lost customer.

b) **Meta Data:** An important concept in warehousing is metadata i.e., how the warehouse has been constructed that explains creation of new variables, how the variable were derived, how often tables are updated, and how much data is in the warehouse.

## **What is Data Mining?**

Data mining refers to such data analysis for identifying customer preferences, Data “mining entails data analysis procedures that identifies and targets significant patterns of variables and characteristics pertaining to distinguishable customers or customer groups. Data mining is employed to explore markets and its varied profiles.

## **Characteristics of Data Mining**

Data Mining has special characteristics which are different from traditional data analysis approaches. The key ones are as follows:

- Data mining is characterized by inter-disciplinary perspectives adopting inputs from diverse but related areas such as statistics, artificial intelligence, machine learning and large databases.
- Data mining tools and techniques operate on large databases. This necessitates modification to suit large datasets.
- The scanning methods are offered autonomy by the data mining techniques resulting in the exploration characterised by automated or semi-automated nature.
- Data mining is usually carried out on data gathered while performing the day-to-day operations of a firm. Such data is subjected to less distortion, though many a time, variable derived may be insufficient to do the desired analysis.

- Data mining facilitates the involvement of the end user in a smooth manner Without the need for any trained intervention either for executing the techniques or for interpreting the results.

### **Tasks, Tools, and Techniques of Data Mining**

Data mining tools and techniques work on huge databases and extract patterns and propositions that are innate. The knowledge derived from the databases by the data mining algorithms is of two types: predictive and descriptive. Prediction refers to finding out the future state of a variable using its past values and the values of other related variables. Description implies finding out the properties that explain the data under consideration.

The challenges encountered during data mining have been dealt with by Matheus et' al. (1993) as: 'The grand challenge of knowledge discovery in databases is to automatically process large quantities of raw data, identify the most significant and meaningful patterns, and present these as knowledge appropriate for achieving the user's goals'.

Data mining tasks are functions that draw upon predictive or descriptive knowledge from large datasets.

#### **The Important Tasks are**

**a) Classification:** In CRM, classification is used to determine buyer behaviour, product and customer types, and campaign management.

**b) Regression:** The value of a dependent function can be figured out based on values of other independent variables through regression. For example, the impact of a particular ad campaign can be measured in tandem with the advertising budget, nature of advertising, etc. The advertising manager can look at the regression equation to make the decision on the budget of the campaign.

**c) Link Analysis:** Relationship between items or attributes in a database to unveil the trends and patterns can be established through link analysis. Link analysis has a historical function too as it helps to trace connections between items of records over time. The major link analysis application in CRM, known as Market Basket Analysis, is a function that seeks relationships between product items characterising product affinities or buyer preferences For example, the

show room manager can display the items in the space based on the association of items that sell together. The manager can reconfigure the display space based on the relationship between items that can be sold together or tracing the association with the past sales trends.

**d) Segmentation:** A thorough knowledge about the different segments is the pre-requisite of a marketing manager for effectively targeting the products / services. The commonalities in terms of the demand from the potential market are grouped to form segments. Segments are identified and their characteristics brought out by using clustering algorithms based on the identified criterion.

**e) Deviation Detection:** Deviation Detection (DD) concentrates on spotting the most important changes in the data from the earlier measured, expected or normative values. Many critical parameters change with the fluctuating market scenario and CRM keeps a tab on that. In such cases, when the parameters change above a certain value as defined by the user, then it is reported for the right action.

Data mining, in most cases, is explorative in action. They explore the possible relationships that exist between variables though the reasons may not be well defined. The highlight of data mining is that it exposes the hidden relationships between variables. The applications of data mining tasks must be guided by the queries that are prone to be asked. Many a time, two or more data mining tasks are used in conjunction on a large database to form insights.

Data mining tools and techniques are algorithms and methods used to perform the data mining tasks. The differences between them are generally in terms of the data operated, assumptions about the data, and scope and analysis of the output. A data mining task could be carried out using two or more tools. For example, classification can be undertaken by decision trees, neural networks or rule induction.

**The following are some of the important data mining tools:**

**a. Decision Trees:** Decision Trees are classification tools that classify examples into finite number of classes considering one variable at a time and dividing the entire data set based on it (Yoon, 1999). Decision Trees define the rules for segmentation and classification.

**b. Rule Induction:** Rule Induction is the process of framing general rules that can be used in many cases from a database of specific examples. Such rules may be of the classification type, predictive type or may be rules that perform link analysis.

**c. Case-Based Reasoning:** Case Based Reasoning (CBR) methods, according to Yoon (1991), try to simulate the thinking process of human being. When a case is served to a CBR solution, it tries to match that with other similar cases that # has in the system and retrieves the case that is most identical to the current case)Decision is then taken based on extrapolation, i.e., picking the decision taken by the most appropriate case. The strength of case based reasoning solutions depends mainly on the indexing method used to store cases and the matching method used to retrieve relevant cases.

**d. Visualisation Techniques:** Visualisation Techniques enable the user to view data from different dimensions using animated and graphic display techniques like charts, diagrams, displays for multi-dimensional data, etc. Visualisation Techniques appeal to the users and highlight the data to be looked into. It also helps to discover new information. VT makes data easily understandable.

**e. Nearest Neighbour Techniques:** According to Yoon (1999), Nearest Neighbor Techniques use a set of examples to approximate a classification model. In classifying a case to a pre-defined class, NNT aids to find its neighbours which have similar properties. A similarity measure is used for the purpose of finding the 'closest' case in terms of certain parameters. Further, the new case is assigned to the class that has the maximum representation amongst its neighbours.

**f. Clustering Algorithms:** Clustering Algorithms divide the database into different groups called clusters in a way that intra-cluster similarity is optimum and the inter cluster similarity is the minimum. Clustering algorithms are used in market segmentation for the marketer to have a comprehensive understanding of the various segments.

Data mining tools must be used judiciously after assessing particular tasks. During transactions, new data constantly comes up into the data warehouse and sometimes the old data is updated. Data mining solution for a particular CRM application must attend (0 that kind of proposition. The integration between front end CRM solution like campaign" management



and the back end data mining solution ensure consistency and accurate and timely information dissemination in the organisation.

### **Uses of Data Mining**

> Data mining helps in locating customers who may defect. Churn models predict the customers who may leave the company. Such customers could be targeted and lured to stick to the company.

>Data mining could be leveraged to make more informed and better decisions.

>Data mining helps to understand the buying behaviour of customers.

> Data Mining detects the favourable segments for communication avoiding wastage of time, money and efforts.

> Data on past interactions can be extremely useful for businesses.

> Data mining provides a user friendly, intuitive interface in the system,

> Real time data mining tools can provide online information.

### **Goals of Data Mining**

The following are the main goals of data mining:

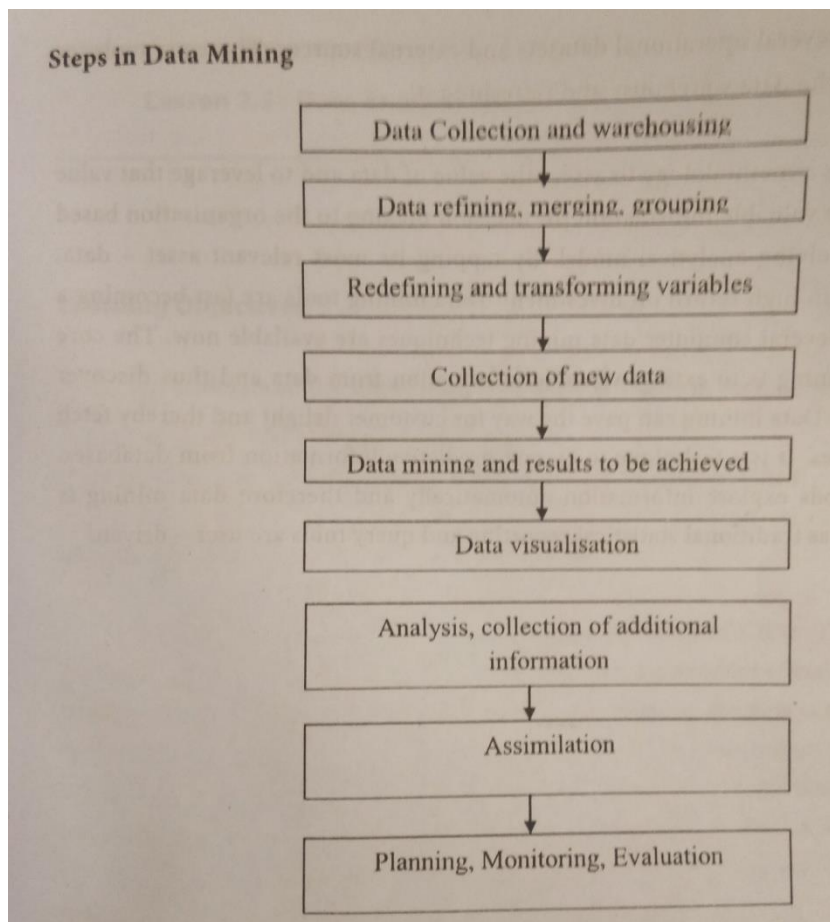
1. Developing deeper understanding of the data
2. Discovering hidden patterns
4. Envisaging actionable insights
4. Recognising relations between variables, inputs, and outputs
5. Forecasting future patterns

### **Data Mining Activities for Better CRM**

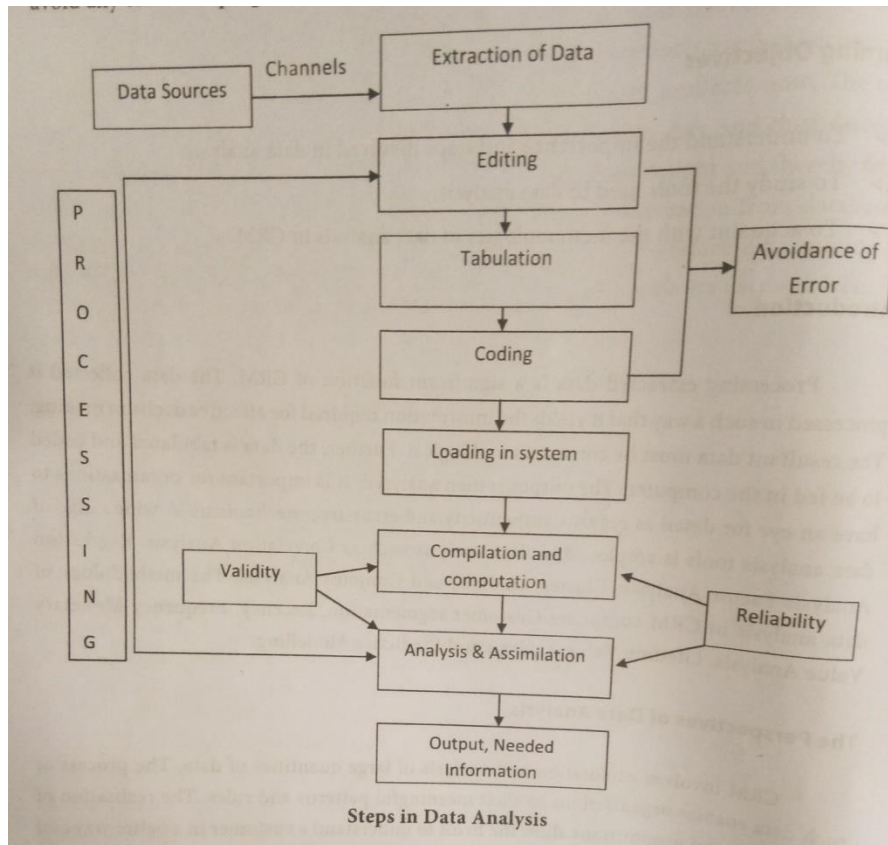
Some of the examples of data mining activities in vogue that can be of great use to CRM practices are:

- Customer defection
- Customer gain and loss analysis
- Customer response analysis
- Customer solicitation
- Promotion and communication analysis

- Sales and purchase analysis
- Seasonality analysis
- Cross-selling and Up-selling
- Niche market selection
- Target marketing
- Channel of distribution analysis



**Data analysis** function entails transforming the raw data into concrete outputs, i.e. the requisite information. Tables of data are compiled, percentages and averages are computed, and comparisons are made between different classes, groups, and categories. At the time of editing and coding care has to be taken by the practitioners and analysts to avoid any error creeping in as such errors affect both validity and reliability.



## Tools for Data Analysis

The analytical tools used for processing data are:

**a. Correlation Analysis:** The correlation analysis expressed by correlation coefficients is used to measure the degree of linear relationship between two variables. The correlation coefficient may be expressed in terms of any value between +1 and -1. The sign of the correlation coefficient (+,-) is an indication of the nature of the relationship, either positive or negative. A positive correlation coefficient means that as the value of one variable also increases, the value of the other variable also increases and vice-versa. A negative correlation coefficient means that as one variable increases, the other decreases, and vice-versa. The absolute value of the correlation coefficient measures the strength of the relationship. A correlation coefficient of zero indicates the absence of a linear relationship and correlation coefficients of  $r = +1.0$  and  $r = -1.0$  indicate an ideal linear relationship. The scatter plots are used to illustrate how the correlation coefficient changes as the linear relationship between the two variables is changed.

Correlation analysis is effectively used for determining customer satisfaction and employee satisfaction as the variables contributing to the overall feeling of satisfaction or loyalty can be distinguished.

**b. Regression Analysis:** Regression analysis measures the strength of a relationship between a variable (e.g.: customer satisfaction) and two or more related variables (e.g.:satisfaction with product quality, service, cost, etc). Regression analysis results in a predictive equation describing the relation between variables. Regression analysis is used for figuring out the satisfaction levels and to simulate the outcome when some actions are being taken.

**c. Factor Analysis:** Factor analysis is used to describe a large number of variables or questions by taking only a reduced set of underlying variables called factors. It explains certain patterns of similarities between observed variables, Factor analysis groups variables which are highly correlated with each other. The two types of factor analyses are exploratory and confirmatory. While exploratory factor analysis is data-driven, confirmatory factor analysis is used in structural equation modeling and tests, and confirms hypotheses. Factor analysis locates core attributes and brings to light the various service dimensions.

**d. Cluster Analysis:** Cluster analysis is an exploratory tool designed to unveil natural groupings within a large group of observations. Cluster analysis aims to segment the survey sample, i.e., respondents or firms into a small number of groups. Depending on the similarity in responses, the respondents are grouped into clusters. The merit of cluster analysis is that it can suggest groupings which are otherwise not evident. Cluster analysis is extensively used in market research to describe and quantify customer segments. This facilitates marketers with information to target customers with distinct marketing approaches.

**e. Conjoint Analysis:** Conjoint analysis entails measuring respondent preferences about the attributes of a product or service. It is a perfect tool for new/improved product development. The relative importance of each attribute of a service can be determined using conjoint analysis.

## **Data Analysis Methodology:**

The following are the key methodologies in data analysis:

**Customer Segmentation:** Customer segmentation is the process of breaking large groups of customers into smaller and more homogenous groups. Potential customers who share certain interests are profiled and grouped together. Those groups of customers will express certain traits that distinguish them. The process of identifying groups of buyers from the total market having distinct buying desires or requirements is called segmentation. The important bases for segmentation are geographic, demographic, psychographic, product-based, and behavioural. Customer segmentation helps the firms to focus on the best customers who may engage in a meaningful relationship.

Customer segments should be created to ensure that the needs of customers belonging to a particular segment are met adequately. The spot light on a particular segment will lead to proper need fulfillment, improved value delivery, increased loyalty, and retention. The factors to be considered for segmentation are:

- i. Long-term Objectives- The objectives that the customer intends to achieve through the use of the product in the long term should be considered while performing segmentation.
- ii. Customer Profile -The customer profile should be defined for proper segmentation. This comprise demographic, geographic, psychographic, behavioural, etc.
- iii. Usage Type- The exact use that the customer wishes from the product has to be figured out as different customers may want different functions from the same product. The diverse usage rate and requirements have to be taken into account during segmentation.
- iv. Buying Behaviour- The buying behavior shown by customers should be captured clearly for proper segmentation. The frequency of purchases and the volume are crucial factors. Determining the needs will ensure proper value delivery.

**b. Recency-Frequency-Monetary Value:** The Recency-Frequency-Monetary Value Analysis identifies customers who are most likely to be repeat customers. It aims to identify and rank the 'best' customers. Furthermore, RFM method identifies the most profitable customers for the company.

**Recency-** implies the transactions with a particular customer can be tracked through which a firm can develop a profile of the customer with respect to the purchase. The regularity of the purchase and the relationship of the customers with the company indicate the level of loyalty. Based on the recency factor, firms can take proactive steps to make relevant offers to the customers taking into account the traits and preferences and evaluate the efficacy of the marketing campaign.

**Frequency-** keeping a tab on customer transactions helps firms to track frequency of purchases. The diminishing frequency of loyal customers can be found out and thus corrective measures can be taken.

**Monetary Value** -The average value of purchases made by particular customers can be tracked from the profiles and purchase behavior exhibited. There is a strong connection between the monetary value of purchases and the customers' relationship with the organization. The company based on the monetary value can determine how rewarding and promising it is for them to form relationships with the customers.

**c. Lifetime Value Analysis:** LTV analysis reveals the firm's cost of acquiring, serving and retaining its customers. The Lifetime value analysis method must be linked with the loyalty programmes. Referrals must be made part of the LTV analysis. The risk rate should also be ascertained.

### **For Calculating LTV**

LTV of any given customer can be expressed as:

$LTV = \text{total revenues, i.e., fixed costs} + \text{variable costs}$

According to Kotler and Keller (2005), Lifetime Value is 'the present value of the stream of future profits expected over the customers' lifetime purchases. The firm may deduct from the expected revenues, the expected costs of attracting, selling, and servicing the customer. CRM will aid in realising the Lifetime Value of customers. Analysts have recommended LTV as a metric for selecting and designing marketing programmes.

## **Benefits**

By comprehending LTV, firms would be able to differentiate among the customers,

Firms segment customers by taking CLTV as a base.

Firms can focus on customers with LTV and ensure that they are highly satisfied.

It will lead to retention of valuable customers.

Lifetime Value is a powerful tool for identifying and managing profitable customers.

**d. Predictive Modeling:** Predictive modeling is a data manipulation technique in which marketers try to figure out what the scope, chances, and prospects are that some other occurrence will take place in the future.

Predictive modeling is the process by which a model is created or chosen to try to best forecast the probability of an outcome. Usually, the model is selected on the basis of detection theory to try to conjure the probability of an outcome, given a set amount of input data. For instance, in the case of an e-mail, the chance of its being a spam is determined.

**e. Market Basket Analysis (MBA):** Market Basket or Commodity Bundle are terms that are used to refer to a fixed list of items charted specifically to track the dynamics of inflation in an economy or specific market. The most common type Market Basket is the basket of products used to define the Consumer Price Index (CPI). There are other types of baskets which are used to define Producer Price Index (PPI), earlier known as Wholesale Price Index (WPI).

Market Basket Analysis in the retail business refers to market research that provides the retailer with concrete information to comprehend the buying behaviour of customers.

**f. Click Stream Analysis:** This process is linked to the website. Click stream Analysis is the process of collecting , analyzing and reporting aggregate data about the web page customers visit; and the order, trends, and practices of accessing them. This is taken into account by computing the results of the succession of mouse clicks each visitor makes (the click stream). The two levels of click stream analysis are traffic analysis and e-commerce analysis.

Click stream can be defined as the record of a user's activity on the internet, including every website and every page of a website that the user visit including particulars on how long was the user on a page or site, in which order the pages were visited, any networking/chat

groups that the user participates in and also the mail addresses in touch with the user.

A click stream is the recording of the parts of the screen a computer user clicks on while browsing the web or accessing another software application. As the user clicks anywhere on the web page or application, the action is logged on a customer or inside the web server, or else the web browser, router, proxy server or ad server.

The advantage of click stream analysis is that it can be used for web activity analysis, software testing, market research, and for analysing employee productivity.

**The two types of click stream analysis are:**

- i) **Traffic Analysis** - This operates at the server level by collecting click stream data related to the path the user takes when navigating through the site. Traffic analysis tracks the number of pages served to the user, the time taken for pages to load, the frequency of the user hitting the browser's back or stop button, and the amount of data transmitted before a user moves on.
- ii) **E-Commerce based Analysis** -This type uses click stream data to determine the effectiveness of the site as a channel to market by quantifying the user's behavior while on the website. It is used to keep track of the pages the user spends time on, what the user keeps in or takes out of his shopping cart and what articles the user purchases.

**g. Personalisation:** Personalisation is defined as the means of generating unique content customised for a particular client. Elements of a personalisation solution configure user profile and content. Personalisation is accomplished by collecting, storing, and analysing information about customers.

The Content in the E-Material has been taken from the text and reference book as given in the Syllabus.